

OFFICE OF THE VICE CHANCELLOR FOR RESEARCH AND ECONOMIC DEVELOPMENT

USM Board of Regents
Committee on Research and Economic Development
March 20th, 2025
Zoom

AGENDA**10:30 a.m.****Call to Order****Bill Wood**

1. [Approval of the minutes – Regent Wood](#)
2. Federal Research Landscape Update – Vice Chancellor of Research and Economic Development, Michele Masucci
3. [Research Report for University of Maryland Center for Environmental Science – Vice President for Science Application, Bill Dennison](#)
4. [Maryland Momentum Fund Update – Managing Director of the Maryland Momentum Fund, Mike Ravenscroft](#)
5. [Major Programs and Resources for Commercialization and External Engagement Report Outs from working groups – Lindsay Ryan – Executive Director of Economic Development, USM](#)

USM Board of Regents Research and Economic Development Committee Minutes for January
31st, 2025

Call to Order: Regent Wood called the meeting to order of the University System of Maryland Board of Regents Committee on Research and Economic Development to order in public session at 10:31am on Tuesday January 31st, 2024, via Zoom.

In attendance:

Panelists: Michele Masucci, Bill Wood, Denise Wilkerson, Julia Chadwick, Michael Ravenscroft, Lindsay Ryan, Jay Perman, Anwer Hasan, Yehuda Neuberger, Ellen Fish, Elena Langrill, Phil Robilotto, Karl Steiner, Ellen Fish, Josiah Parker, Michael Ravenscroft, Kevin Anderson, Alison Wrynn

Audience: 31 attendees in the audience.

Agenda:

- 1. Approval of Minutes.** Regent Wood called a vote to approve the minutes from the December 10th meeting of the Board of Regents committee on Research and Economic Development. Regent Wood motioned to approve the minutes, and Regent Parker seconded. The motion carried unanimously.
- 2. USM Research Award Discussion.** Regent Wood opened the floor to discussion on the potential for a USM Research Award ceremony meant to highlight and promote exceptional research throughout the system. The committee endorsed the idea of having a USM Regents-level research excellence awards program.

3. University of Maryland, Baltimore County Enterprise Research. Karl Steiner, Vice President for Research and Creative Achievement at UMBC, presented an overview of the university's research efforts. He highlighted key areas of excellence, including environmental and space sciences, data science, health and life sciences, community studies, history, and the arts. Notable initiatives included partnerships with NASA Goddard for lunar instruments in the ARTEMIS III mission, NSF-funded nuclear fusion reactor projects, the new DOE Frontier in Energy Research Center, and cybersecurity, IT, and quantum computing programs supported by the Department of Defense. He also discussed the UMB/UMBC Institute for Clinical and Translational Research, the Center for Innovation, Research, and Creativity in the Arts, and the Dresher Center for the Humanities. Vice President Steiner celebrated UMBC's recent designation as an R1 research institution under Carnegie's classification system and reviewed HERD expenditure data over five years. Meeting materials are publicly available on the USM website.

4. Economic Development. Lindsay Ryan, Executive Director of Economic Development at USM, presented the USM External Engagement strategy. She highlighted the work of the five-member External Engagement Task Force, which met over six months to support the goals of the USM strategic plan and strengthen partnerships both within USM and with private industry. Following a landscape analysis, the task force recommended building capacity, enhancing existing engagement, streamlining collaboration between institutions and industry, and launching initiatives to advance fields where Maryland excels. Meeting materials are publicly available on the USM website.

Action items:

5. Minutes from the 12/10/2024 RED Committee meeting were approved to move forward to the next full board meeting.

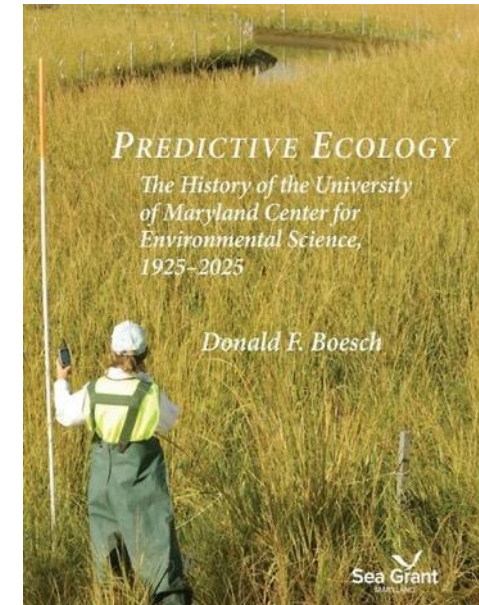
6. The committee endorsed the idea of having a USM Regents-level research excellence awards program.
7. The UMB Technology Commercialization presentation by Phil Robilotto, the Momentum Fund Update by Michael Ravenscroft, and the Venture Development presentation by Lindsay Ryan were postponed until the next RED committee meeting due to time constraints.

Adjourned: Regent Wood gave his closing remarks and adjourned the meeting at 12:10 p.m.

Science at UMCES

USM Board of Regents
Committee on Research & Economic Development
20 Mar 2024

Bill Dennison



UMCES centennial this year

Studying environmental problems

Solving environmental problems

1925

Chesapeake Biological Laboratory established

1972

Tropical Storm Agnes

1983

Chesapeake Bay Program formed

2015

Chesapeake Monitoring Cooperative formed

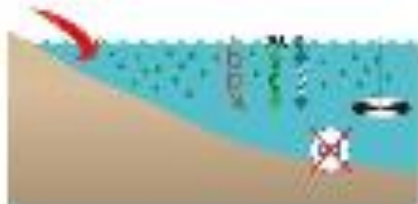
2025

Chesapeake Global Collaboratory

Estuarine science



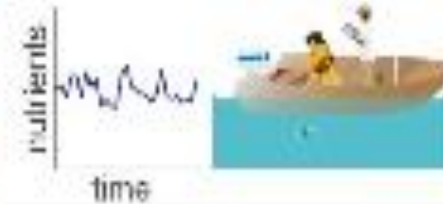
Eutrophication science



Integrated monitoring and modelling science



Citizen science



Interdisciplinary

Multidisciplinary

Transdisciplinary

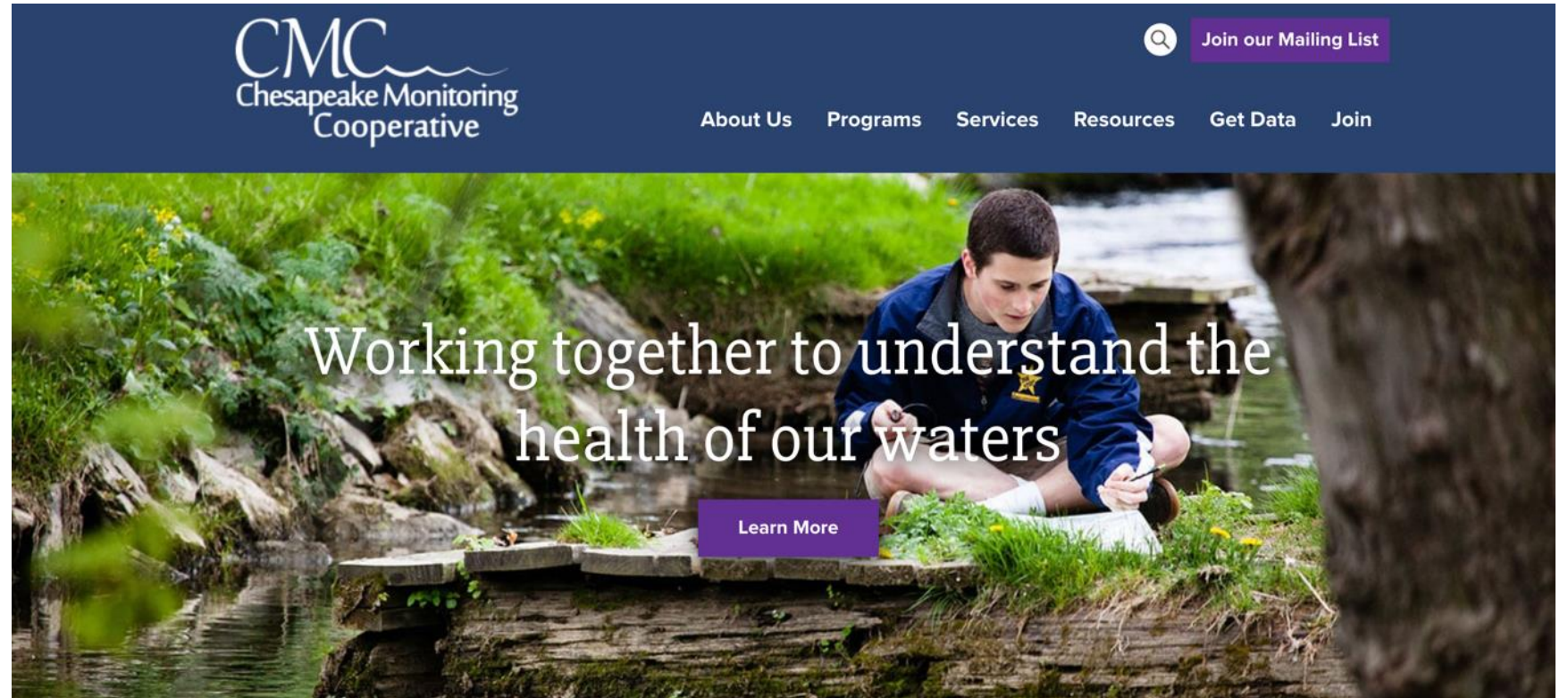
Messing around with oysters for 100 years



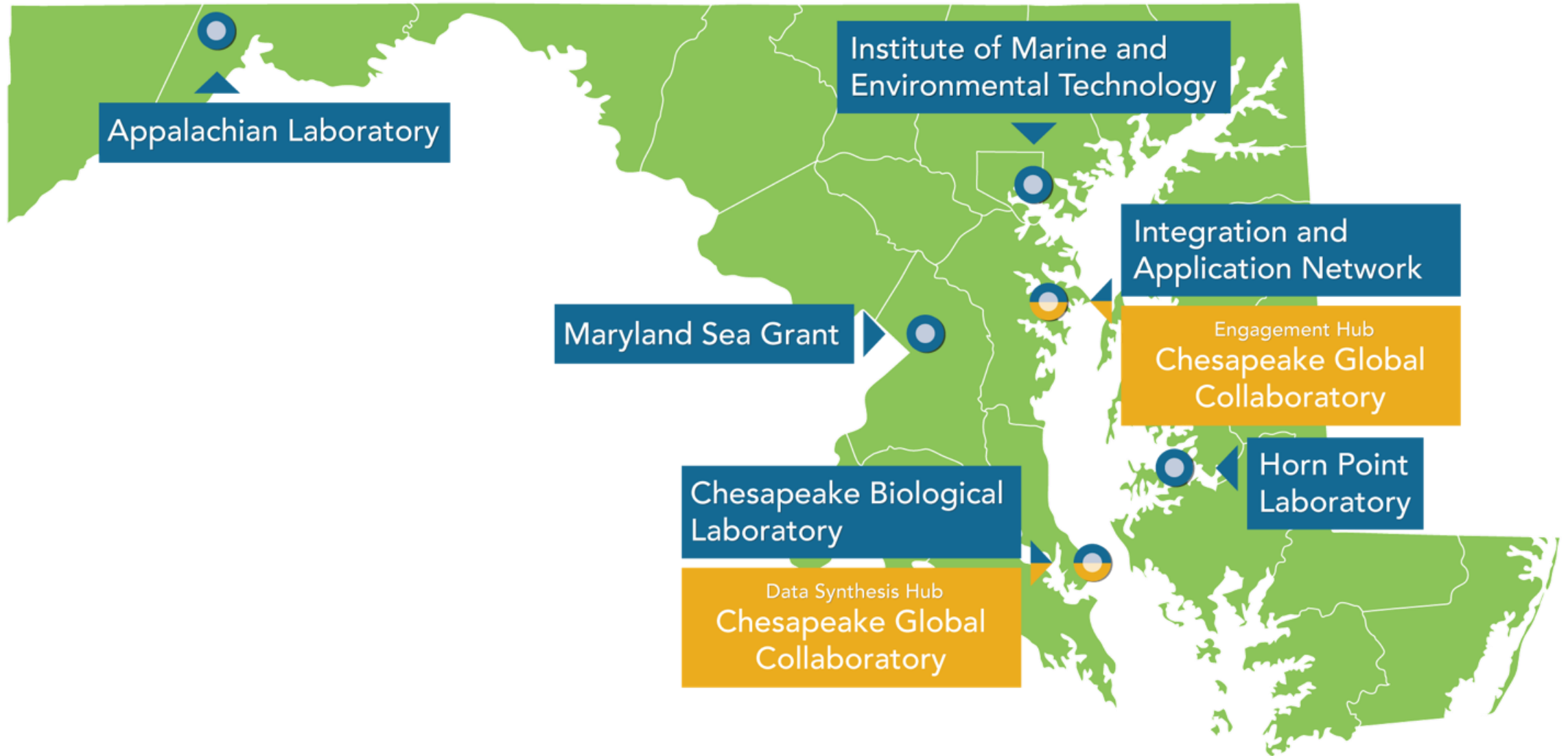
Chesapeake Monitoring Cooperative



- Initiated in 2015
- Citizen science data hub
- Training and capacity building program
- Partnership with Chesapeake Bay Program and several NGOs
- Recently uploaded one millionth data point!



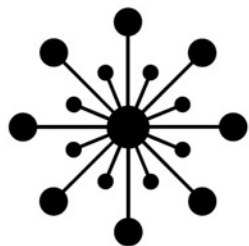
UMCES facilities are state-wide



UNIVERSITY OF MARYLAND CENTER FOR ENVIRONMENTAL SCIENCE

CHESAPEAKE GLOBAL COLLABORATORY

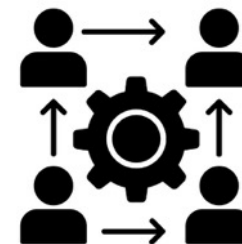
A Think, Do, and Innovate Tank



Big data and
visualization



Requires engagement
with diverse groups



Increasingly complex
project planning



University of Maryland
CENTER FOR ENVIRONMENTAL SCIENCE

Collaboratory functions



Cyberinfrastructure



Data science support



Stakeholder engagement
and workshop facilitation



Science communication



Education and training



Chesapeake Analytics Collaborative Building

A \$22M investment by the State of Maryland

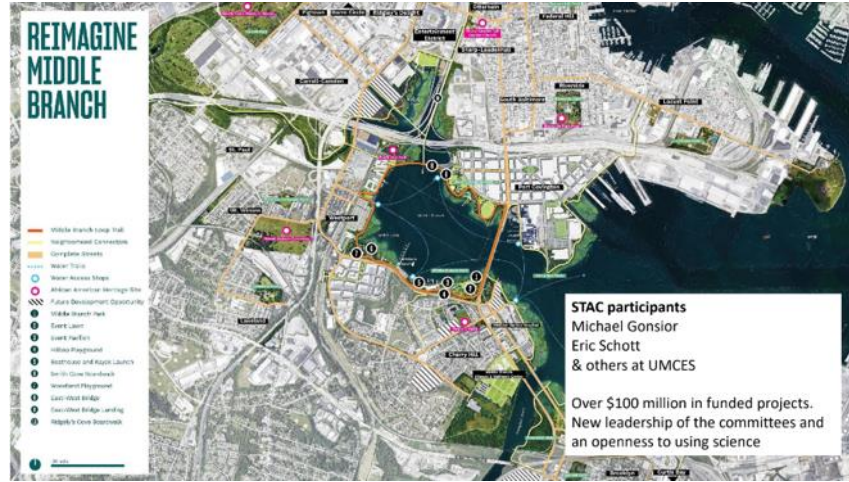
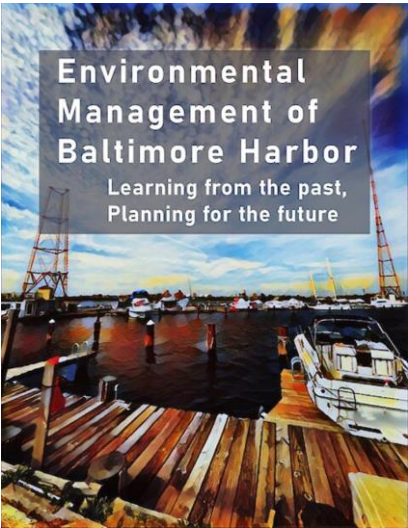
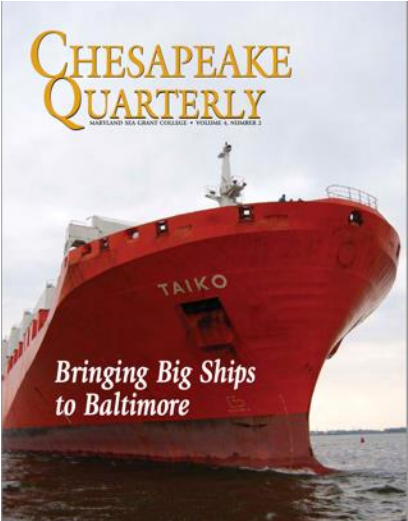


Funding: Recent major awards by UMCES faculty

- “Enhancing the transdisciplinary research ecosystem for earth and environmental science with dedicated cyber infrastructure professionals”
(NSF SCIPPE program); \$3.8 M/4 years; Elmore, Coles, Zhang, Janeja
- “Global Nitrogen Innovation Center for Clean Energy and Environment”
(NSF Global Centers); \$4.9 M/5 years; Zhang, Houser, Davis, Elmore, Harris, Liang, IAN
- "Collaborative Research: Implementation Grant: Active Societal Participation In Research and Education"
(NSF Cultural Transformation); \$7.5 M/5 years; Harris, Davis, various partners
- “Quantifying the efficacy of wastewater alkalinity enhancement on marine carbon dioxide removal and acidification mitigation in a large estuary”
(NOAA Marine carbon dioxide removal); \$1.8 M/3 years; Testa, M. Li, various partners



UMCES heavily involved in Baltimore Harbor



Planning a Baltimore Harbor Summit

UNIVERSITY OF MARYLAND CENTER FOR ENVIRONMENTAL SCIENCE
**CHESAPEAKE GLOBAL COLLABORATORY:
BALTIMORE HARBOR IN CONTEXT**



MOVING TOWARDS AN INTEGRATED VISION FOR BALTIMORE HARBOR



Recently created an Office of Professional Studies

- Created online professional certificate (EdX & Coursera); 11+K enrollments; 172 countries



Environmental Management for Sustainability

4 courses, 5 months

- Recently launched new professional certificate, partnering with UMD Engineering



Environmental Project Management: Co-Creating Sustainable Solutions

3 courses, 4 months



- Digital badges



Philanthropic support for UMCES research emerging

\$1.5M for endowed chair (France-Merrick Foundation)

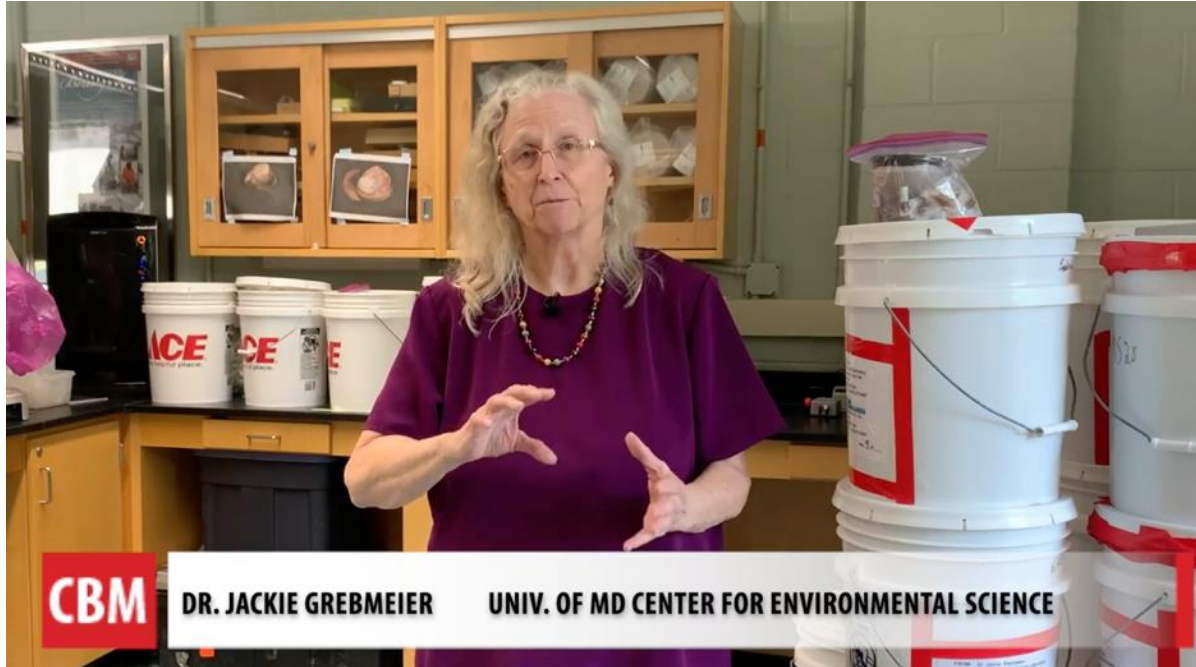
\$1M for Anthropogenic Changes in Estuarine Systems (Hockheimer/Wax)

\$1M for endowed chair (Hockheimer/Wax)

\$150K for proof of concept Chesapeake Global Collaboratory project (Merrill Family)



UMCES research: Genes to ecosystems, Mountains to sea, Tropics to poles



UMCES heavily involved in the Chesapeake Bay Program

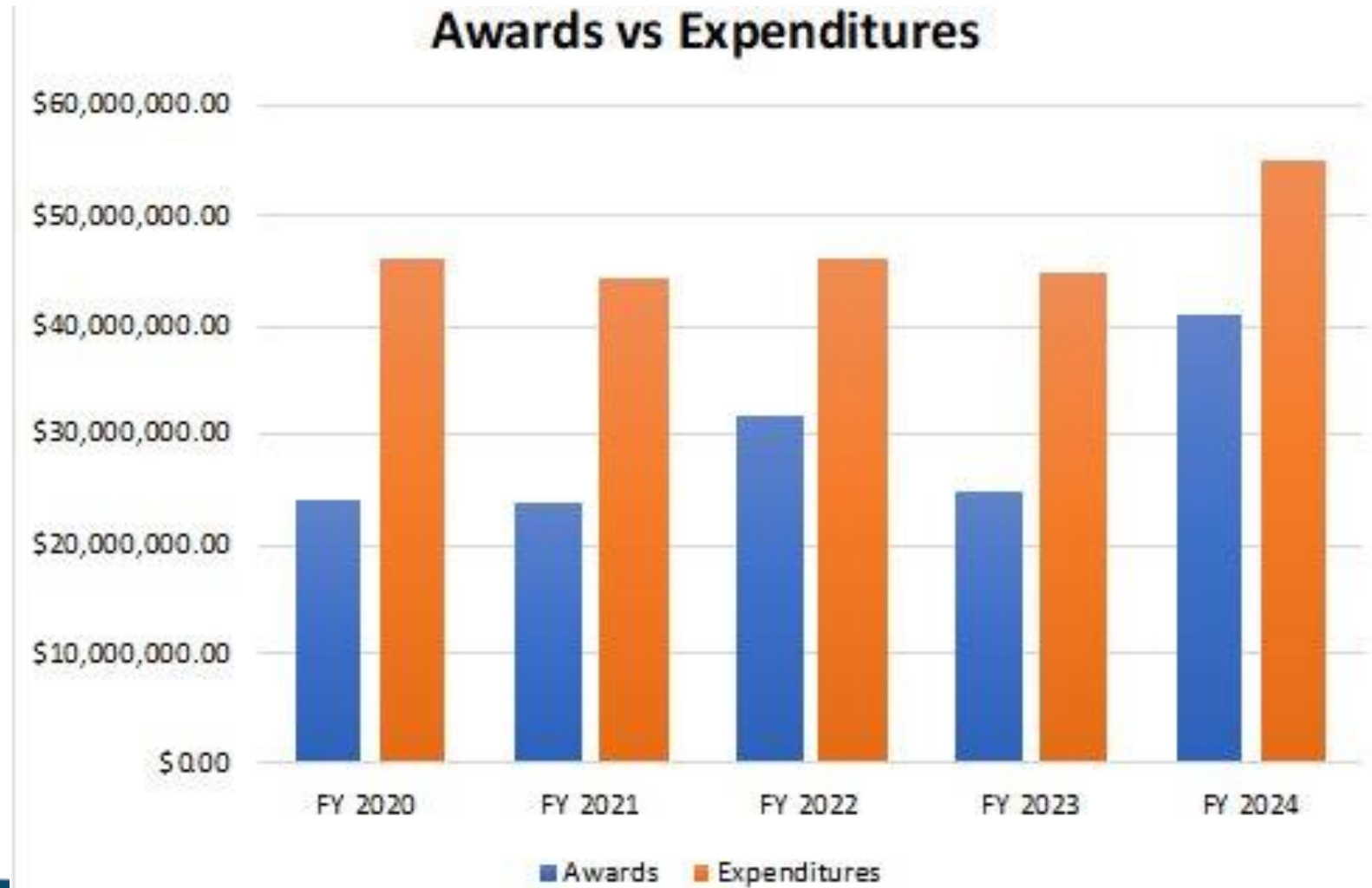
Larry Sanford:
Science & Tech. Advisory Comm. Chair



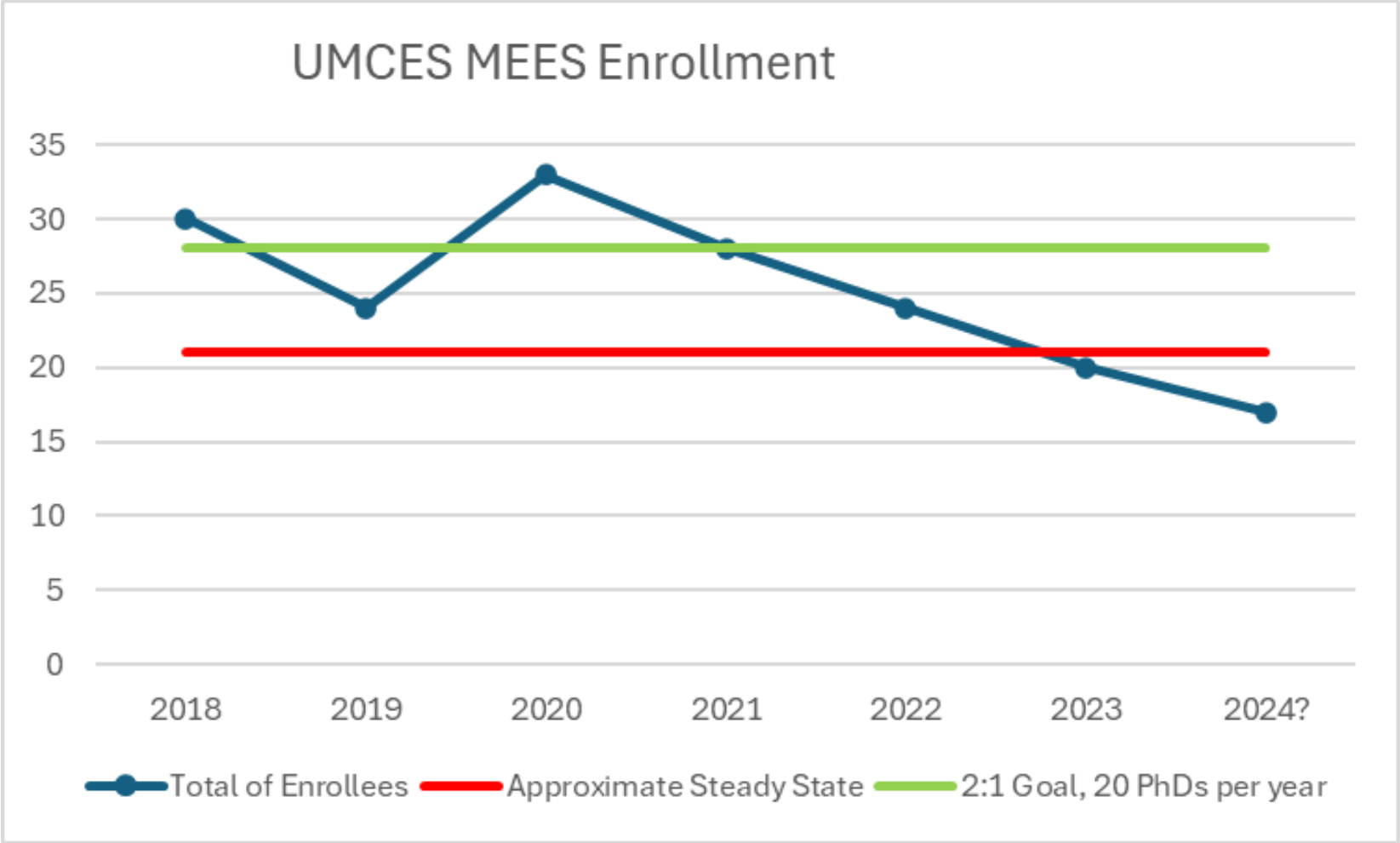
Integration & Application Network:
Annual Chesapeake Watershed Report



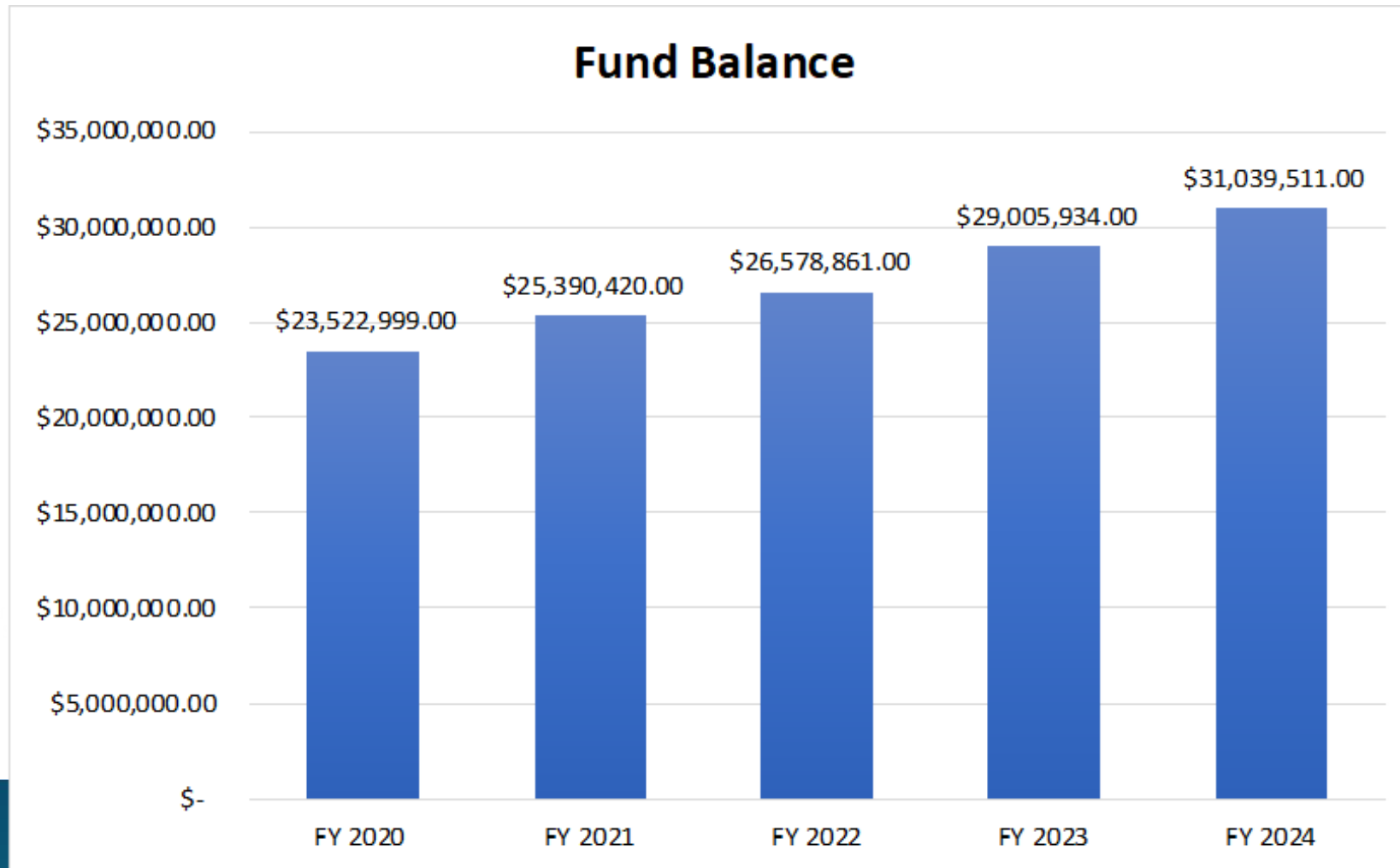
R2: UMCES research budget exceeds \$50M



R2: Graduate student enrollment



R2: We plan to use \$1M from our fund balance to bolster student numbers



UMCES federal funding only 27%

Environmental Institutions that Reported Expenditures to NSF HERD from 2012-2021						
Institution	FY 2021 Total Dollars in Research Expenditures	FY 2021 Total Dollars in Federal Expenditures	% Total Funding Federal	Number of Faculty	Number of Students	NSF HERD Rank
Scripps UCSD	485,435,000	272,181,000	56%	235	350 (G)	58
Woods Hole Independent	262,048,000	222,351,000	85%	250	500 (G)	103
UMCES USM	51,201,000	14,072,000	27%	74	94 (G)	202
ESF SUNY	28,440,000	6,979,000	25%	134	1745 (U) 373 (G)	243
DRI NSHE	26,365,000	16,641,000	63%	400*	100 (G)*	249



Conclusion: **UMCES is at an inflection point**

- Society is facing impending environmental and climate crises.
- UMCES science and applications of science are uniquely poised to address these challenges.
- We have an alignment of the state of Maryland, University System of Maryland, federal agencies.
- The Chesapeake Global Collaboratory represents a new way to engage partners and garner resources.
- UMCES centenary is celebrating its founding in 1925.
- We are rejuvenating our personnel with new President, Lab Directors and faculty.
- **We are poised for an inflection toward a more robust UMCES.**



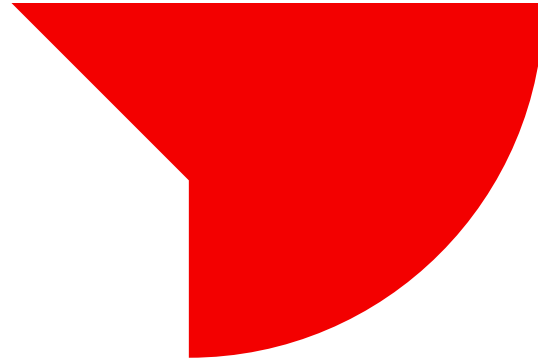
Maryland Momentum Fund

**Board of Regents
Q1 2025 Fund Update**

Presented By:
Mike



Ravenscroft
Managing
Director



Fund investment activity: 2024

**3 USM
Institutions**

**12X ratio
leveraged
capital**

4 investments in 2024

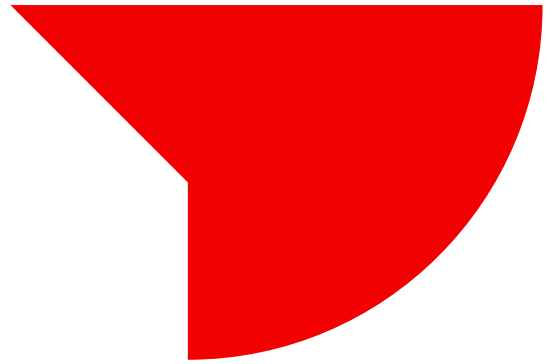
\$590K invested

50% technology
transfer

\$6.17M fund balance

\$10.76M invested by
MMF to date

28 active portfolio
companies, 4
successful exits



Company Acquisition:



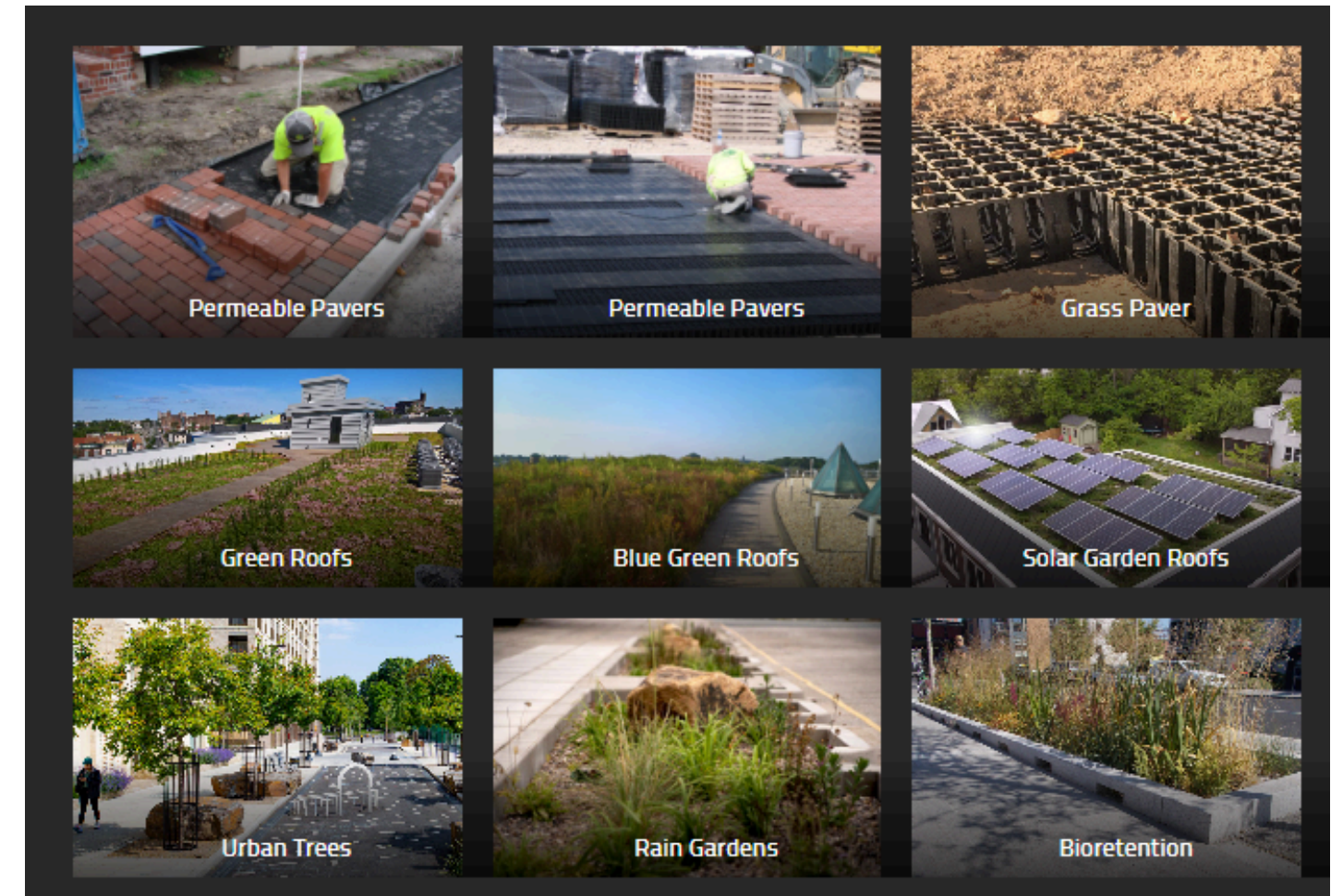
Invested in 2019



Co-investment with
University of
Maryland, College
Park

Raised from MMF,
Chesapeake Bay SCF,
local angel investors

Acquired by a North
American stormwater
solutions provider

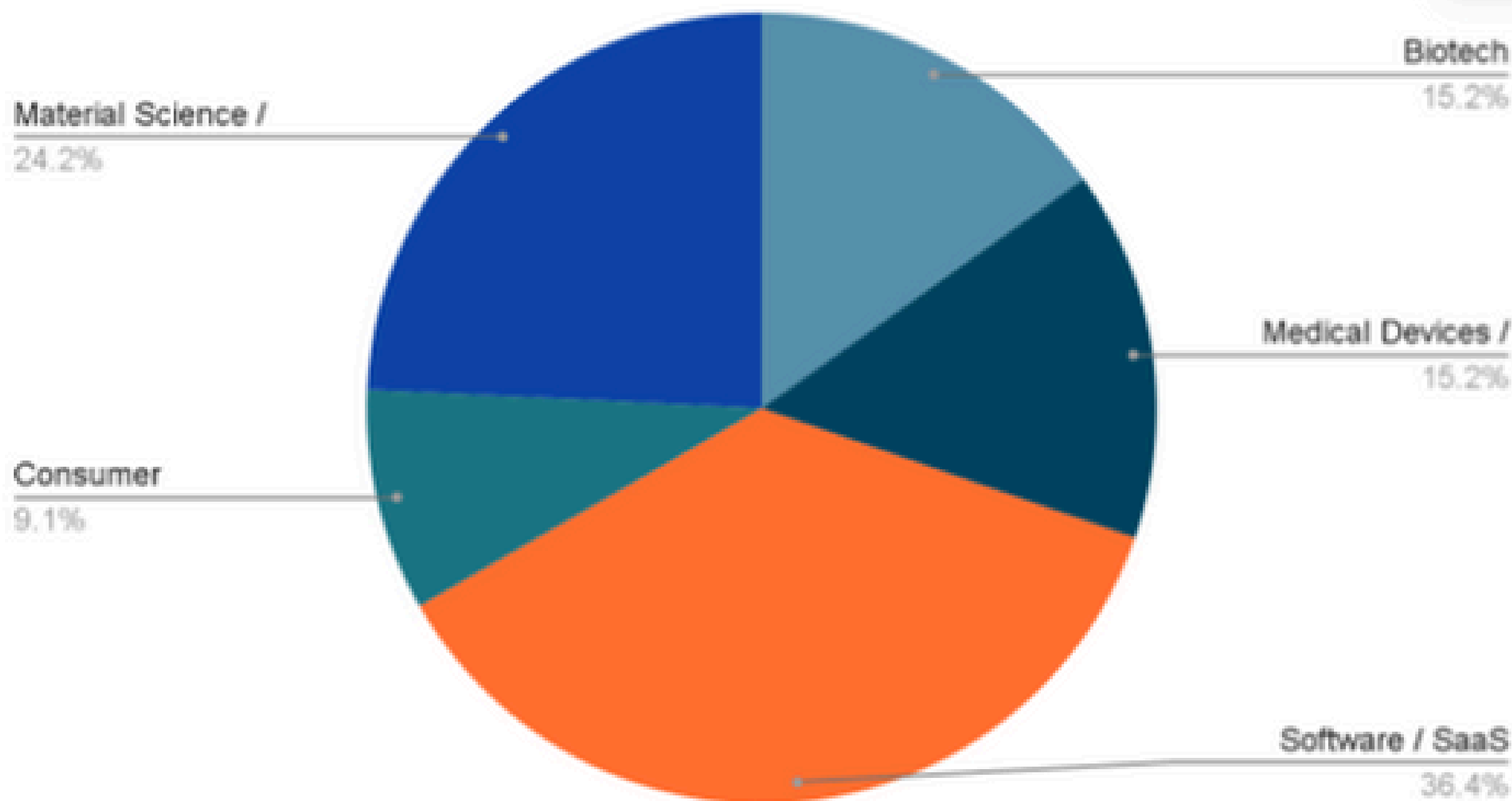


Support from the Momentum Fund and the Chesapeake Bay Seed Capital Fund helped the company launch, grow, and exit.

Portfolio snapshot: March 2025

- 29 active
- Employ approximately 280 people on a full or part-time basis
- 50% BIPOC founders
- 25% female founders

Company type





Our North Star:

Equip USM students with the skills, connections, and professional experience they need to build careers in venture capital.

VENTURE FELLOWS PROGRAM: WHY WE LAUNCHED

THE PROBLEM

There are few opportunities for USM students to gain exposure to venture capital. As a result, the industry remains insular and difficult to access.

THE SOLUTION

Create a robust regional talent pipeline using the Maryland Momentum Fund's network of VCs and our access to the USM talent pool.

VALUE

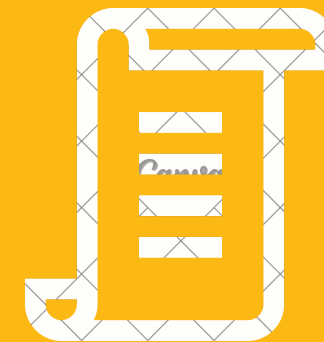
Secure venture internships and career pathing for USM students, make a name for USM as a talent pipeline for venture roles, and deepen MMF's ties to the national venture community.

ABOUT THE USM VENTURE FELLOWS PROGRAM

OUR MISSION:

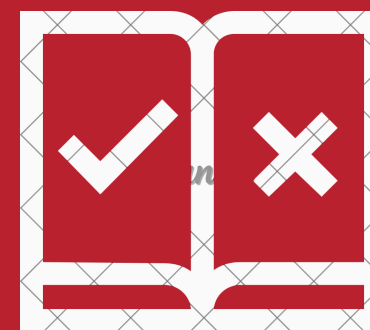
Empower students of all backgrounds to enter and explore the venture capital and early-stage finance industries confidently and fearlessly.

GOAL



Provide USM students an on-ramp to enter the venture ecosystem and serve as a critical venture talent pipeline in the Mid-Atlantic and beyond.

PROGRAMS



The Venture Fellows Program consists of three phases: Applications and matching, educating & training, and mentorship through their summer Internship.

How we're tracking in Year 2:

150+ applicants
from 5 USM
institutions

37 participating
venture funds

90+ interviews

16 internship
offers

12 offers
accepted = 12
venture fellows

Who are our students?



20 fellows and counting

Across **5 USM** institutions (and counting)

Diversity of backgrounds and degree areas

All of them aspiring to roles in the **Maryland venture ecosystem**

Looking nationally:



Mostly **internal**
facing

Primarily **academic**
in nature

Don't emphasize
integration with
local venture
ecosystem

How we differentiate:



UNIVERSITY SYSTEM
of MARYLAND

MARYLAND MOMENTUM FUND

Direct career
advancement

Designed to
integrate
students with
local venture
ecosystem

Internship as
the starting
point

Combination of
academic,
practical, and
network
development

Creating value
for our
ecosystem
partners

USM Innovation Collective

Lindsay Ryan
Executive Director of Economic Development
January 31, 2025



USM Invention, Innovation, and Entrepreneurship Support

USM OVCRED re-convened USM leaders supporting invention, innovation, and entrepreneurship in November.

The group was challenged to characterize USM's collective support, success, and future directions.

A summary of this work follows.

USM Invention, Innovation, and Entrepreneurship Support

A Strong Base

Education

- All 12 institutions support students of all ages with innovation and entrepreneurship education.
- Many provide venture development training and capital through competitions.



Discovery to Creation and Impact

All 12 institutions create environments that foster discovery, invention, and creation, with pathways for impact.



USM Innovation Collective

Excellence

The **USM Innovation Collective** is the constellation of resources that support inventors, innovators, and entrepreneurs.

For the Good of ALL Marylanders

- Student, faculty, community
- Developing human capital
- Trusted access, public benefit

Varied, Distributed, Connected

- Industry, geography, ventures
- USMO-connected leaders
- Resilient, effective, efficient



OpenAI. AI-Generated Image. Created on 12/5/24, via ChatGPT

USM Innovation Collective

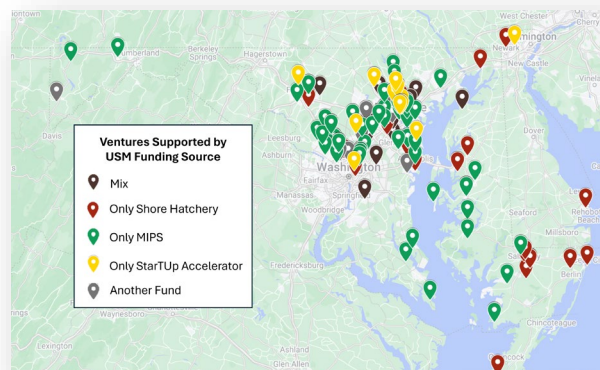
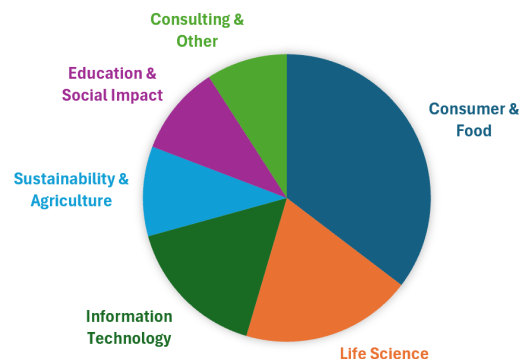
Excellence

For the Good of ALL Marylanders

USM adds about 180 startups each year to the portfolio of ventures it significantly supports

- About 1/3 are led by USM students
- 7% are translating USM research discoveries into impact

Varied, Distributed, Connected



USM Innovation Collective

Excellence: 23+ OPEN resources

Online Guide: <https://marylandentrepreneurhub.com/guides/university-system-of-maryland-resources>



- **Training, Expertise & Talent.** Includes the Innovation Extension and I-Corps, Maryland Technical Internship Program, Small Business Development Centers, Legal Clinics, and Maryland New Venture Program



- **Funding-Forward Support.** Includes the Launch Fund, Momentum Fund, Dingman Angels, Maryland Industrial Partnerships, and Chesapeake Bay Seed Capital Fund



- **Bolstering Local Economies.** Includes the Baltimore Fund, Discovery Fund, StarTUp Armory and Accelerator, SU Shore Hatchery, and Incubators, Research Parks, and Innovation Districts



- **Discovery, Innovation in Focus.** Includes the Quantum Startup Foundry, U.S. Harmful Algal Bloom Control Incubator.

Several **university-affiliated individuals across multiple universities**: Maryland and Baltimore Innovation Initiatives; IMET Ratcliffe Environmental Entrepreneur Fellowship; UMB/UMBC NIH REACH Hub

USM Innovation Collective

Impacts of Excellence by the Numbers

Since 1987, the Maryland Industrial Partnerships (MIPS) program has supported 696 companies and supported **27,000 jobs**, with a **41 to 1 return on investment**. 87% of MIPS-funded startups are still in business 5 years later.

*Since 2013, the Philip E. and Carole R. Ratcliffe Shore Hatchery competition hosted by Salisbury University has distributed over \$2 million in funds to Mid-Atlantic startups and aspiring entrepreneurs, helping them overcome critical obstacles to venture formation and growth with cash grants of up to \$50,000. Winners have self-reported estimated profits of **\$98 million** and created over **1,000 jobs**.*

Since 2017, the Baltimore Fund administered by UMB has created or retained **700+ jobs** and assisted 68 entities, with a return on investment of **\$16+ million** in investment and grants and **\$65 million** in revenue.

*Since 2017, the USM Maryland Momentum Fund has invested \$11.7 million in 27 companies from 8 USM institutions, creating **170+ new jobs**. The Fund's portfolio companies have raised **\$125 million** from **230+ unique co-investors**.*

In 2023, the Maryland Technical Internship Program administered by UMBC supported **61 organizations**, primarily startups and small businesses, across 11 Maryland counties. 98% of hosts reported that the program's interns made significant contributions to their business growth and organizational improvements.

*In 2024, StarTUp at the Armory welcomed over **10,000 new and returning visitors** who chose the StarTUp as their go-to co-working and business engagement hub*

USM institutions are among the **top 25 patent-earning** institutions in the nation, with **81 startups** formed based on USM intellectual property over the last five years.

USM Innovation Collective

Impacts of Excellence by the Marylanders

Elaine Haynes, Allan Doctor, and Dipanjan Pan of KaloCyte
Emergency Health



<https://kalocyte.com/>

Mustafa Al-Adhami of Astek Diagnostics
Global Health



<https://astekdx.com/>

USM Innovation Collective

Moving to Preeminence

- Grow research-to-impact capacity in alignment with research growth
- Maintain connectivity through growth of the USM Innovation Collective
- Explore partnerships with philanthropic and private sector partners in and outside of Maryland

APPENDIX

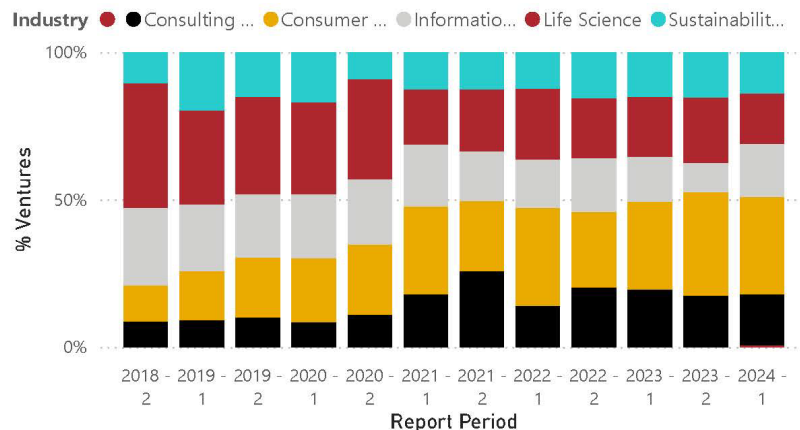
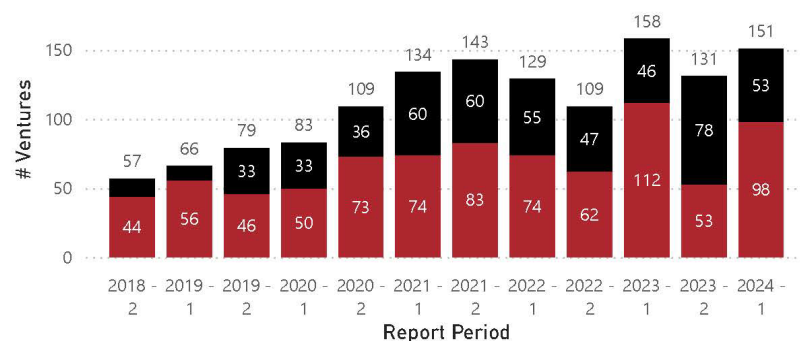
Venture Development Report January – July 2024



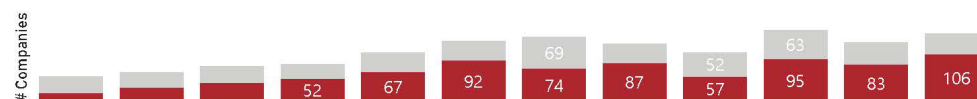
Ventures Supported

USM Status ▼ Report Period ▼
 All ▼ All ▼

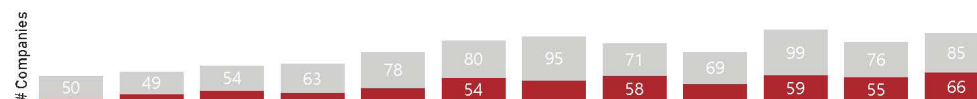
USM Status ● NEW TO USM ● RE-ENGAGED



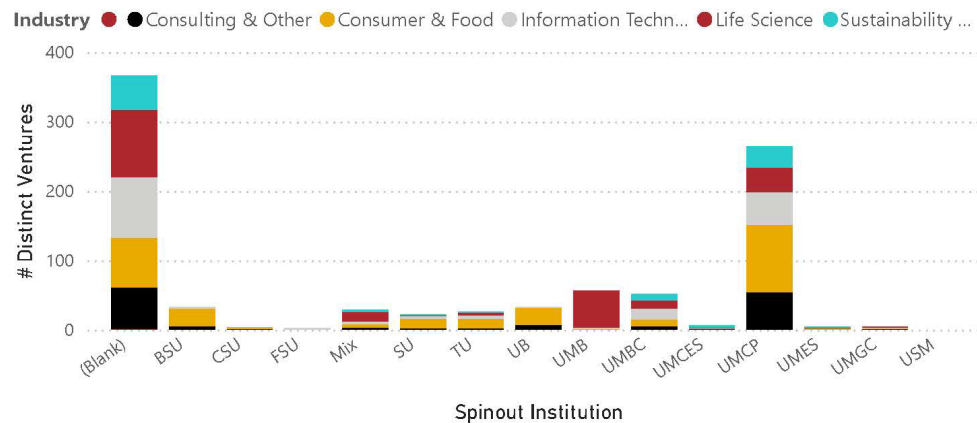
USM Founders (Red)



Student Founders (Red)



USM IP (Red)



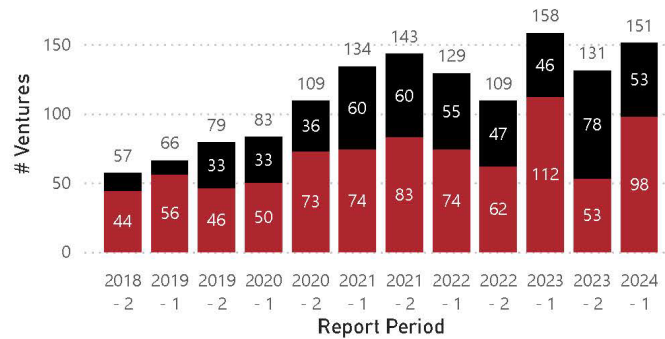
Ventures Supported

USM Status

All

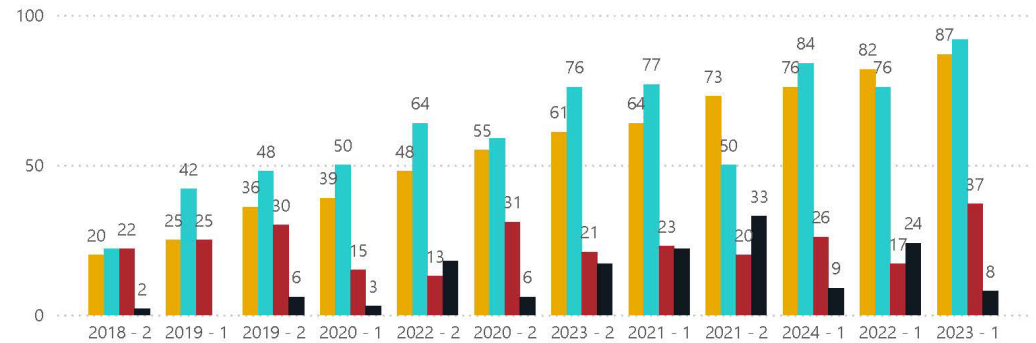
Report Period

All

USM Status ● NEW TO USM ● RE-ENGAGED


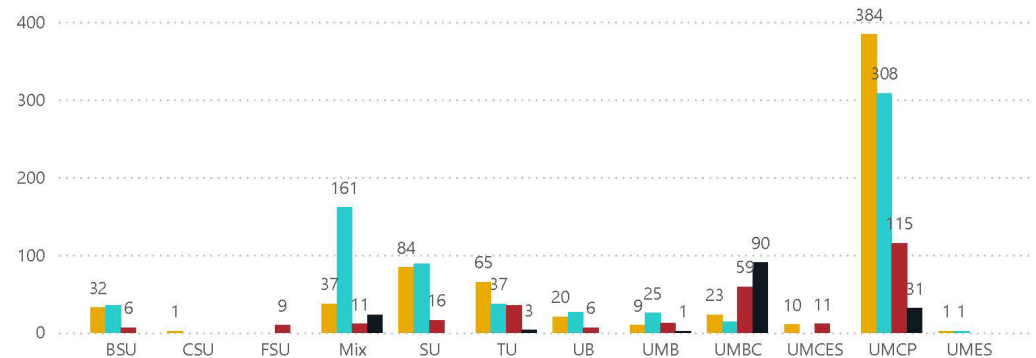
Support by Type

● Programming & Mentoring ● Capital (In-Kind and Cash) ● Incubator and/or Physical Space ● Talent Assistance



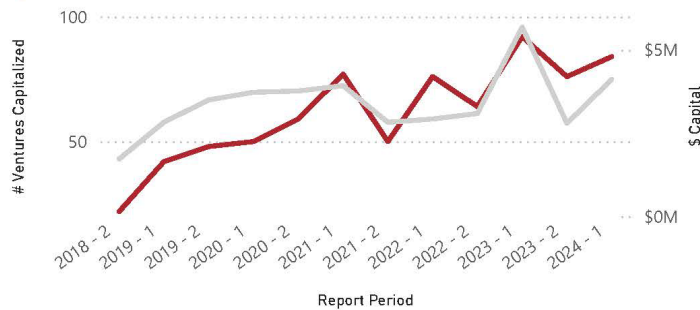
Support by Type and Institution (All-Time)

● Programming & Mentoring ● Capital (In-Kind and Cash) ● Incubator and/or Physical Space ● Talent Assistance



Capital Support

● # Ventures Capitalized ● \$ Capital



Additional State-Wide Venture Support



Helps Maryland retain top tech talent by increasing the number of paid technical internships offered in the state. Administered by UMBC and funded by the State of Maryland, the program offers financial assistance to technology-based businesses, as well as state and local agencies, to hire more interns (mtip.umbc.edu).

About 30% of startup participants also are USM "spinouts" or "spin-ins".



The Maryland Small Business Development Center (SBDC) is a public-private partnership between the U.S. Small Business Administration, the State of Maryland and UMCP. The Maryland network hosts entrepreneurial assistance programs at a number of USM institutions.

Companies Assisted Through USM Small Business Development Centers

University ● Frostburg State University (FSU) ● Salisbury University (SU) ● University of Maryland

